National Infrastructure Protection Plan

Energy Sector

Homeland Security Presidential Directive 7 (HSPD-7) identified 17 critical infrastructure and key resources (CI/KR) sectors and designated Federal Government Sector-Specific Agencies (SSAs) for each of the sectors. Each sector is responsible for developing and submitting Sector-Specific Plans and sector-level performance feedback to the Department of Homeland Security (DHS) to enable national cross-sector CI/KR protection program gap assessments. SSAs are responsible for collaborating with private sector security partners and encouraging the development of appropriate information-sharing and analysis mechanisms within the sector.

Sector Overview

The U.S. energy infrastructure fuels the economy of the 21st century. Without a stable energy supply, health and welfare is threatened and the U.S. economy cannot function. More than 80 percent of the country's energy infrastructure is owned by the private sector.

The energy infrastructure is divided into three interrelated segments: electricity, petroleum, and natural gas. The U.S. electricity segment contains 5,000 power plants with approximately 905 gigawatts of generating capacity. Approximately 50 percent of electricity is produced by combusting coal (primarily transported by rail), 20 percent in nuclear power plants, and 18 percent by combusting natural gas. The remaining generation is provided by hydroelectric plants (7 percent), oil (2 percent), and by renewable (solar, wind, and geothermal) and other sources (3 percent). Electricity generated at power plants is transmitted over 158,000 miles of high-voltage transmission lines. Voltage is stepped down at more than 63,000 substations before being distributed to 131 million customers over millions of miles of lower voltage distribution lines. The electricity infrastructure is highly automated and controlled by utilities and regional grid operators using sophisticated energy management systems that are supplied by supervisory control and data acquisition (SCADA) systems to keep the system in balance.

The petroleum segment entails the exploration, production, storage, transport, and refinement of crude oil. The crude oil is refined into petroleum products that are then stored and distributed to key economic sectors throughout the U.S. Key petroleum products include motor gasoline, jet fuel, distillate fuel oil, residual fuel oil, and liquefied petroleum gases. Both crude oil and petroleum products are imported, primarily by ship, as well as produced domestically. Currently, 63 percent of the crude oil required to fuel the U.S. economy is imported. In the United States, there are more than 500,000 crude oil producing wells, 30,000 miles of gathering pipeline, and 74,000 miles of crude oil pipeline. There are 152 petroleum refineries, 95,000 miles of product pipeline, and 2,000 petroleum terminals. Petroleum also relies on

sophisticated SCADA and other systems to control production and distribution; however, crude oil and petroleum products are stored in tank farms and other facilities.

Natural gas is also produced, piped, stored, and distributed in the U.S. Imports of liquefied natural gas (LNG) are increasing to meet growing demand. There are more than 383,000 gas production and condensate wells and 45,000 miles of gathering pipeline in the country. Gas is processed (impurities removed) at 726 gas processing plants and there are more than 254,000 miles of interstate pipeline for the transmission of natural gas. Gas is stored at 410 underground storage fields and 96 LNG storage facilities. Finally, natural gas is distributed to homes and businesses over 981,000 miles of distribution pipelines. The heavy reliance on pipelines highlights the interdependency with the Transportation Sector and the reliance on the Energy Sector for power means that virtually all sectors have dependencies on the sector.

The Energy Sector is well aware of its vulnerabilities and is leading a significant voluntary effort to increase its planning and preparedness. Cooperation through industry groups has resulted in substantial information sharing of effective and best practices across the sector. Many sector owners and operators have extensive experience abroad with infrastructure protection and have more recently focused their attention on cyber security.

Sector Partnerships

The Department of Energy (DOE) will coordinate with sector information-sharing organizations through the Homeland Security Information Network and other approaches as well as other concerned organizations such as the Federal Energy Regulatory Commission, the North American Electric Reliability Council, the National Association of Regulatory Utility Commissioners, the National Association of State Energy Officials, and the governments of Canada and Mexico to share energy infrastructure information and plan exercises that address energy infrastructure issues.

On August 8, 2005, President Bush signed HR 6 into law, the Energy Policy Act of 2005, which requires the implementation of mandatory electricity reliability standards in the U.S. The reliability standards will be paralleled by implementation in Canada. Ongoing responsibility for monitoring and reporting with respect to implementation of recommendations following up on the 2003 Northeast Blackout will be assumed by a joint U.S./Canada oversight group.

The Energy Sector has been proactive in the development and implementation of security programs to support CI/KR protection. The Electricity, Oil and Natural Gas, and government sectors have continued to develop programs and initiatives to advance CIP goals and priorities.

DOE and other Federal, State, and local government agencies have been working with their security partners—public/private utilities—through Energy Sector coordinating councils for oil and natural gas and electricity to better secure critical infrastructure and key resources (CI/KR) across the Nation.

The Electricity Sector Coordinating Council (ESCC) represents more than 95 percent of Electricity Sector owners and operators and has been meeting on a regular basis to discuss the Sector-Specific Plan and other security initiatives. The Oil and Natural Gas Sector Coordinating Council (ONG SCC) represents more than 98 percent of Oil and Natural Gas Sector owners and operators. This council, formed by the Oil and Natural Gas trade associations, serves as a broad industry-wide network to help coordinate ongoing industry initiatives, government partnerships, and responsibilities. The council selects a representative from the industry to serve as chair of the ONG SCC and act as the liaison to DHS.

A Government Coordinating Council (GCC) was established in early 2004, co-chaired by DHS and DOE, and consists of the Federal sector energy-related organizations, as well as those representing State and local governments. The GCC has met with their SCC counterparts to share information. With the creation of the DHS Critical Infrastructure Partnership Advisory Council (CIPAC), which reports to the Secretary of Homeland Security, the Energy GCC, the ESCC, and the ONG SCC have formed joint working groups under the CIPAC structure and are working together to protect the Nation's critical energy infrastructure.

Homeland Security

For questions or more information, please contact NIPP@dhs.gov or visit www.dhs.gov/nipp.